July 31, 2023

OIG Insights

The Board's Approach to Climate Risk Supervision at Financial Institutions

Office of Inspector General
Board of Governors of the Federal Reserve System
Consumer Financial Protection Bureau

Abstract

For the purposes of this paper, *climate risk* is the risk financial institutions face stemming from the effects of climate change. The Board of Governors of the Federal Reserve System is in the early stages of its supervisory work to assess the climate-related financial risk to financial institutions in its purview. The objective of this review was to identify key areas of consideration as the Board develops and implements a supervisory approach for climate risk at financial institutions. In this paper, we share insights based on comparing the Board's approach to climate risk supervision to the approaches of other central banks and financial regulatory agencies.

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Introduction

U.S. financial supervisory and regulatory agencies and their foreign counterparts have begun work to assess climate change as a risk to financial institutions and the broader financial system. The Board of Governors of the Federal Reserve System addresses this topic through its supervisory responsibility to assess the safety and soundness of supervised institutions.

Mandates and supervisory responsibilities differ across central banks. While the Board's dual monetary policy mandate as outlined in the Federal Reserve Act is price stability and maximum employment, the agency's supervisory responsibilities focus on financial stability and the safety and soundness of individual institutions in its purview.[1] For the purposes of this paper, we limit our comparisons to supervisory efforts to assess the financial risk from climate change to the safety and soundness of individual institutions. We refer to these efforts as *climate risk supervision*. To conduct this review, we interviewed relevant Board and Federal Reserve Bank officials and employees; reviewed applicable policies, procedures, guidance, and agency practices; and met with representatives from other financial supervisory agencies and central banks. We conducted our review from April 2022 through May 2023.[2]

In this paper, we compare the Board's approach to climate risk supervision to the approaches of other financial supervisory and regulatory agencies and central banks. In the background section, we describe the risks to financial institutions from climate change and central banks' differing mandates to address those risks. The first section of the paper discusses the Board's initial work on this topic, conducted through its Supervision Climate Committee (SCC), to develop its approach to climate risk supervision and compares the Board's work to that of other U.S. financial regulatory agencies. The subsequent sections discuss important aspects of the Board's planned approach and compare those aspects to the approaches of other central banks and financial supervisory agencies.

Each section of this paper summarizes insights we gained, which are as follows:

1. The Board is in the early stages of its supervisory work on climate-related financial risk.
2. The Board is developing interagency principle-based guidance on climate risk management similar to guidance developed by its foreign counterparts.
3. The Board initiated a pilot climate scenario analysis exercise similar to exercises developed by its foreign counterparts.
4. The Board's approach to climate risk supervision focuses on the largest institutions, which differs from the approach of some foreign and U.S. supervisors.
5. Climate risk uncertainty and data availability pose challenges for supervisors and supervised institutions.

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1 This paper does not include discussion of the Board's or the Federal Reserve Banks' climate-related financial stability or economic research work.

2 We shared this OIG Insights paper with the Board. Because this paper does not contain findings or recommendations, the Board elected to forgo a management response.

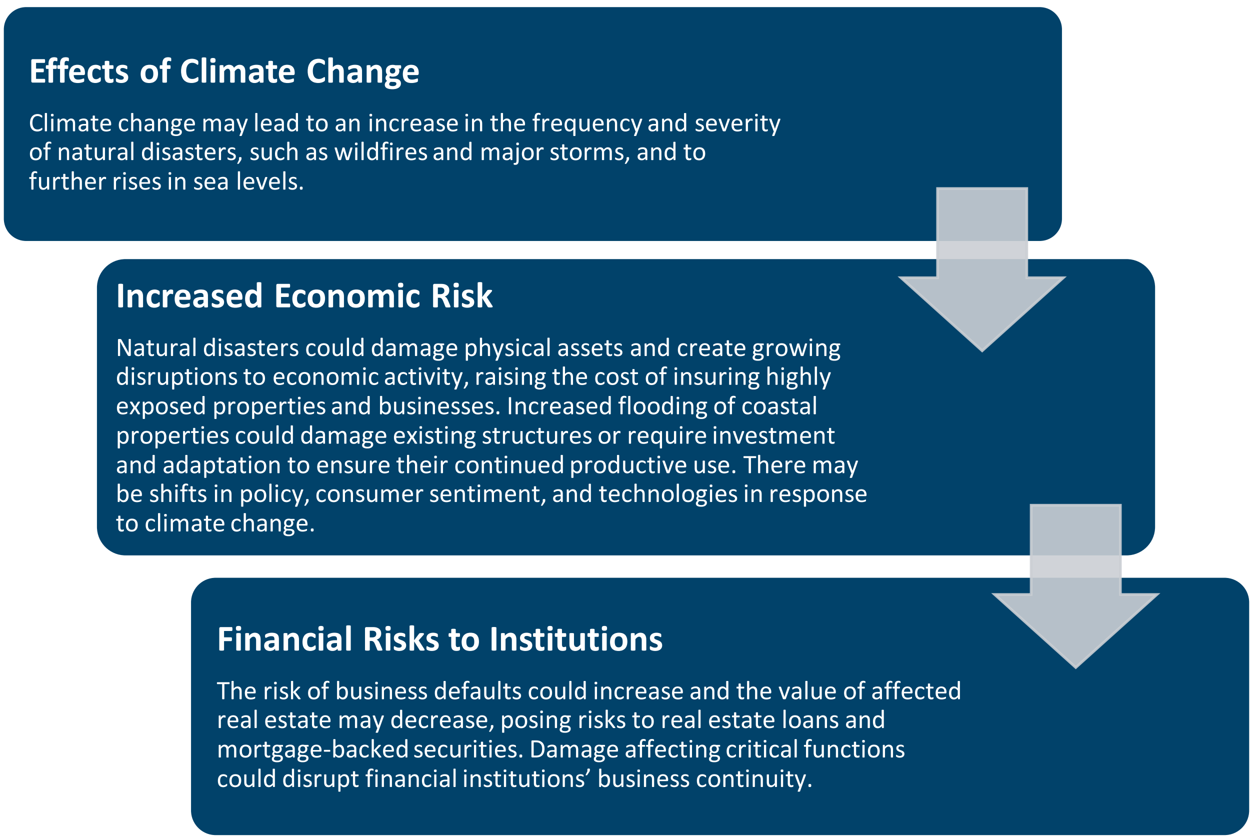
Background

U.S. financial agencies and their foreign counterparts have begun supervisory work on climate risk to financial institutions. In this section, we describe the various types of climate-related financial risks and the differing mandates and supervisory responsibilities across financial regulatory agencies and central banks to address the risks.

Climate-Related Financial Risks

For the purposes of this paper, *climate risk* is the risk financial institutions face stemming from the effects of climate change.[3] The illustration below shows how climate change could affect financial institutions.

Figure 1. Potential Effects of Climate Change on Financial Institutions



Source: OIG developed from Board of Governors of the Federal Reserve System, FEDS Notes, "Climate Change and Financial Stability," March 2021.

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[3] Network of Central Banks and Supervisors for Greening the Financial System, *Guide for Supervisors Integrating Climate-Related and Environmental Risks Into Prudential Supervision*, May 2020.

The financial risks from climate change can be broadly grouped into two categories: physical risks and transition risks.

- **Physical risks.** An increase in the frequency and severity of weather events and long-term shifts in climate patterns cause damage to property or assets. These physical risks may be acute or chronic.
    - **Acute physical risks** arise from events such as lethal heatwaves, floods, wildfires, and severe storms.
    - **Chronic physical risks** arise from events such as rising sea levels and rising average temperatures, which happen slowly over time.
- **Transition risks.** Societal changes in response to climate change, such as shifts in public policy, consumer and business sentiments, or technology, cause uncertain financial effects.

Certain climate-related risks to the safety and soundness of banks may be mitigated by insuring property and assets. However, insurance may not fully cover the risks of losses from climate change, resulting in residual risk to the institutions. Additionally, insurance may be unavailable or unaffordable following extreme weather events: Insurers may exit markets or raise premiums if losses from disasters are higher than expected. According to an internal Board analysis, institutions and their borrowers face a repricing risk: Insurance premiums are determined on an annual basis, and the average loan life is 7–8 years for mortgages and 3–5 years for commercial real estate. This repricing risk may make insurance unaffordable for borrowers, thereby increasing risks to institutions.

Traditional Microprudential Risks

Climate change risks may manifest as the traditional microprudential risks financial institutions typically experience, including credit, market, and operational risk (table 1).

Table 1. Examples of Climate-Related Microprudential Risks

Risk category	Examples of climate-related microprudential risks
Credit	The destruction of a borrower’s production site by a severe weather event may increase the probability of the borrower defaulting on the loan.
Market	Severe weather events may lead to the repricing of financial instruments and corporate debt, affecting financial institutions’ balance sheets.
Operational	Severe weather events may affect financial institutions’ business continuity through, for example, damage to critical functions of the institutions or their service providers.

Source: OIG adapted from Network of Central Banks and Supervisors for Greening the Financial System, *Guide for Supervisors: Integrating Climate-Related and Environmental Risks Into Prudential Supervision*, May 2020.

According to the Board’s draft *Principles for Climate-Related Financial Risk Management for Large Financial Institutions*, although climate risks may manifest as traditional risks, financial institutions may face challenges incorporating climate-related financial risks into their risk management frameworks.

These potential weaknesses in financial institutions' approaches to managing climate-related financial risks could adversely affect their safety and soundness.[4]

Differing Mandates and Supervisory Responsibilities

Mandates and supervisory responsibilities differ across central banks. According to the Board's November 2020 *Supervision and Regulation Report*, one of the agency's supervisory responsibilities is to assess the safety and soundness of the financial institutions in its purview to determine whether these institutions can continue to provide financial services to their customers in the face of all types of risk, including those related to climate change.[5]

Some central banks have specific statutory mandates to support their countries' efforts to reduce emissions.[6] For example, the United Kingdom's Ministry of Finance formally updated the Bank of England's mandate to reflect the government's economic strategy for sustainable and balanced growth that is also environmentally sustainable and consistent with the transition to a net zero economy (meaning, greenhouse gas emissions as close to zero as possible).[7] Also, the Hungarian Parliament formally granted the Hungarian National Bank an environmental sustainability mandate that provides a legal basis for aspects of environmental protection and sustainability.[8]

Other central banks view supporting their countries' efforts to reduce climate change as falling within preexisting mandates. For example, the European Central Bank's (ECB) monetary policy strategy notes that climate change has profound implications for price stability and that addressing climate change is a policy priority for the European Union. As such, the ECB committed to ensuring that the Eurosystem fully takes into account, in line with the European Union's climate goals and objectives and the ECB's mandate, the implications of climate change and related transition risks for monetary policy and central banking.[9]

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[4] Board of Governors of the Federal Reserve System, *Principles for Climate-Related Financial Risk Management for Large Financial Institutions*, Bulletin 2022-26648, December 2022.

[5] Chair Powell stated in a January 2023 speech at the Symposium on Central Bank Independence that decisions about policies to directly address climate change should be made by the elected branches of government and thus reflect the public's will as expressed through elections. He noted that in his view, the Board does have narrow, but important, responsibilities regarding climate-related financial risks and that these responsibilities are tightly linked to the Board's responsibilities for bank supervision.

[6] An analysis of International Monetary Fund central bank legislation data from 2018 identified 16 central banks with mandates to support sustainable growth. Specifically, the analysis found that the central banks of the Czech Republic, Fiji, Gambia, Georgia, Hungary, Iraq, Malaysia, Nepal, the Philippines, the Russian Federation, Singapore, South Africa, Tanzania, Ukraine, the West African Economic and Monetary Union, and Zimbabwe had sustainability related mandates at that time. Simon Dikau and Ulrich Volz, "Central Bank Mandates, Sustainability Objectives and the Promotion of Green Finance," *Ecological Economics*, vol. 184, 2021.

[7] Bank of England, *Remit for the Monetary Policy Committee*, May 2021.

[8] Magyar Nemzeti Bank, *Sustainability and Central Bank Policy–Green Aspects of the Magyar Nemzeti Banks's Monetary Policy Toolkit*, July 2021.

[9] European Central Bank, *The ECB's Monetary Policy Statement*, 2021.

As another example, Banque de France also views reducing climate change as part of its monetary mandate because of the effects of climate change on price stability.[10]

[10] Banque de France and ACPR, *Climate Action Report*, November 2022.

The Board Is in the Early Stages of Its Supervisory Work on Climate-Related Financial Risk

The Board and other U.S. financial regulatory agencies are in the early stages of their supervisory work on climate-related financial risk. The Board has begun to develop and implement a supervisory approach to address climate-related financial risks. Through the SCC, the Board has engaged with stakeholders and conducted analysis to better understand the potential climate-related risks to large supervised institutions. The SCC's efforts formed the basis for the Board to develop draft climate risk management principles for public comment and to plan for and initiate a pilot climate scenario analysis exercise at six institutions. In this section, we provide an overview of the SCC's work to develop and implement an approach to climate risk supervision at financial institutions. We also discuss the comparable efforts of other U.S. financial regulatory agencies.

The Board's Supervision Climate Committee

The Board established the SCC in December 2020 to develop and implement a supervisory program to address climate-related financial risks to supervised firms. The SCC is responsible for guiding the development of the supervisory program for climate-related financial risks, including recommending policy adjustments, and incorporating that program into the Board's comprehensive supervision program.

The SCC comprises Board officials and staff from the Board's Division of Consumer and Community Affairs, Division of Financial Stability, Division of Research and Statistics, Division of Supervision and Regulation, and Legal Division, as well as Reserve Bank officials and staff. Interviewees described the SCC's structure as a multidiscipline, cross–Federal Reserve System approach and stated that it is similar to an approach the System used in the past.[11]

SCC Workstreams

To meet its objective, the SCC established three workstreams: (1) engagement, (2) analysis, and (3) policy and program development (figure 2).

[11] The Federal Reserve System encompasses the Board and the Reserve Banks.

Figure 2. Overview of the SCC's Workstreams

Engagement workstream	Analysis workstream	Policy and program development workstream
• The SCC held over 130 meetings, as of December 2022, with external stakeholders, such as financial institutions, nonprofits, advocacy groups, financial data and service providers, and academics. • As of December 2022, the SCC held over 30 meetings with over 10 large financial institutions to share climate-related developments. The SCC launched a series of climate roundtable discussions for policymakers that centered on the impact of climate-related financial risks. • The SCC has engaged with multiple federal and state banking agencies, central banks, and supervisory authorities on climate supervision–related work.	• The SCC researched potential climate risk scenario testing options and developed a pilot climate scenario analysis exercise to occur in 2023 for six of the largest supervised institutions in the United States. • The SCC has held regular roundtable discussions with Reserve Bank contacts to share information on analytical work and to solicit input. SCC members also built an inventory of the System's climate supervision–related work. • The SCC has conducted some work to analyze existing guidance and its application to climate-related financial risks.	• SCC members contributed to the Board's efforts to issue draft climate risk management principles for public comment.[a] • The SCC developed internal trainings for System supervisory staff to raise awareness of (1) the basics of climate-related financial risks and the goals and structure of the SCC, (2) the portfolio-specific engagement principles, and (3) the pilot climate risk scenario testing exercise.

Source: OIG developed from internal Board documentation.

[a] On December 8, 2022, the Board issued Bulletin 2022-26648, *Principles for Climate-Related Financial Risk Management for Large Financial Institutions*, for public comment.

U.S. Financial Regulators' Steps to Address Climate-Related Financial Risk

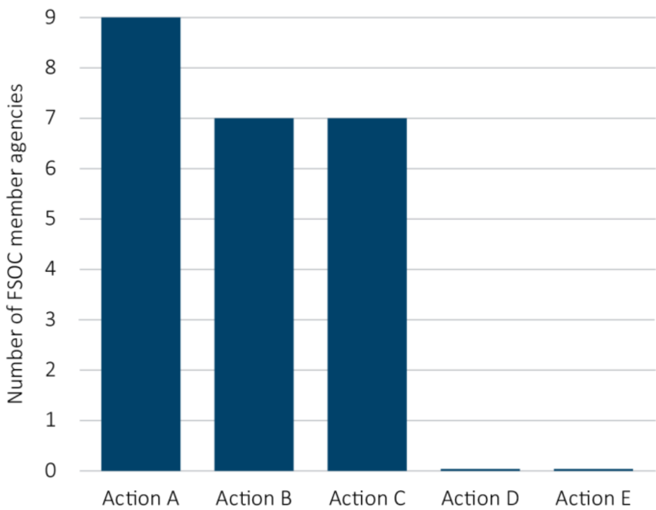
Other U.S. federal financial regulatory agencies have also begun addressing climate risk at financial institutions, in manners consistent with their respective mandates. In October 2021, the Financial Stability Oversight Council (FSOC) issued a report describing the FSOC member agencies' efforts on climate-related risk; the report includes 35 recommendations that FSOC member agencies can adopt to strengthen the U.S. financial system to make it more resilient to climate-related shocks and vulnerabilities.[12] The federal financial regulatory FSOC member agencies have all publicly acknowledged

[12] In May 2021, the president of the United States issued an executive order titled *Climate-Related Financial Risk*. The order directs the secretary of the treasury, as the chair of FSOC, to issue a report to the president on FSOC member agencies' efforts to integrate consideration of climate-related financial risk in their policies and programs.

the financial risk posed by climate change and stated their commitment to addressing the risk.[13] Most of these member agencies have established a committee or appointed a chief climate officer to support their efforts. While a few member agencies have formally requested public comment on their proposed approach to managing climate risk or on their draft climate risk principles or guidance, as of April 2023, none had issued final climate risk principles or guidance.

Figure 3 summarizes the climate-related actions of the nine voting federal financial regulatory agencies that constitute FSOC.

Figure 3. FSOC Member Agencies' Actions to Address Climate-Related Financial Risks as of April 2023



A	Issued a public statement regarding the financial risks climate change could pose to the economy and the financial system.
B	Established an internal committee or appointed a climate risk officer to guide climate change research or develop climate-related supervisory guidance.
C	Requested public comment on the agency's response to climate risk or draft supervisory guidance related to climate risk.
D	Completed stress testing or scenario analysis on climate-related financial risks.
E	Issued final formal climate-related principles or guidance.

Source: OIG analysis of publicly available information for the FSOC voting member federal financial regulatory agencies.

[13] The federal financial regulatory FSOC member agencies are the Board, the Commodity Futures Trading Commission, the Consumer Financial Protection Bureau, the Federal Deposit Insurance Corporation, the Federal Housing Finance Agency, the National Credit Union Administration, the Office of the Comptroller of the Currency, the U.S. Securities and Exchange Commission, and the U.S. Department of the Treasury.

The Board Is Developing Interagency Principle-Based Guidance on Climate Risk Management Similar to Guidance Developed by Its Foreign Counterparts

The System uses a risk management approach to assess risks to supervised institutions, including climate-related financial risks, in accordance with its supervisory responsibility to assess the safety and soundness of these institutions.[14] In line with this risk management approach, the Board requested public comments on draft principles for climate-related financial risk management for institutions with over $100 billion in assets.[15] The Board, in conjunction with the Office of the Comptroller of the Currency (OCC) and the Federal Deposit Insurance Corporation (FDIC), plans to issue interagency principle-based guidance for climate-related financial risk. Internationally, some central banks and supervisors have finalized similar, formal high-level principles advising financial institutions to incorporate climate-related financial risks in their risk management frameworks.

Draft Principles on Climate-Related Financial Risk Management

The Board collaborated with the OCC and the FDIC, and each issued separate, similar draft principles to guide financial institutions in managing their climate-related financial risk.[16] In December 2022, the Board requested public comments on these principles; the principles would provide a high-level framework for the safe and sound management of exposure to climate-related financial risks for Board-supervised financial institutions with over $100 billion in assets. The draft principles state that weaknesses in how institutions identify, measure, monitor, and manage the potential physical and transition risks associated with a changing climate could adversely affect an institution's safety and soundness, as well as that of the overall financial system. The Board plans to consider the public comments it received before proceeding

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[14] According to the Board's November 2020 *Supervision and Regulation Report*, System supervisors are responsible for ensuring that supervised institutions operate in a safe and sound manner and can continue to provide financial services to their customers in the face of all types of risks, including those related to climate change.

[15] On December 2, 2022, six Board governors voted for an action to invite public comment on proposed principles providing a high-level framework for the safe and sound management of exposures to climate-related financial risks for large banking organizations. One Board governor voted against the action and issued a statement noting disagreement with the premise that climate change poses a serious risk to the safety and soundness of large banks and the financial stability of the United States. Another governor issued a statement noting support for seeking public comment while emphasizing that the vote should not be interpreted as support for finalizing the guidance. This governor further stated that it is critical that any final principles complement the existing supervisory framework supporting the safety and soundness of financial institutions, and that the Board consider the costs and benefits of any new expectations.

[16] The OCC and the FDIC previously issued proposed climate risk management principles. On December 16, 2021, the OCC issued Bulletin 2021-62, *Principles for Climate-Related Financial Risk Management for Large Banks*, for public comment. On March 30, 2022, the FDIC issued Bulletin 2022-07065, *Principles for Climate-Related Financial Risk Management for Large Financial Institutions*, for public comment.

to issue final interagency principles with the OCC and FDIC.[17] The draft principles are intended to support efforts by large financial institutions to focus on key aspects of climate-related financial risk management. The draft principles advise institutions to establish appropriate governance for climate-related financial risks and to consider climate risks in their assessments for risks, including credit, liquidity, and operational risks.

Climate Risk Management Expectations of Foreign Central Banks and Supervisors

Some foreign central banks and supervisors have issued formal expectations that financial institutions incorporate the risks from climate change in their risk management frameworks. Notably, the Bank of England's Prudential Regulation Authority (PRA) was the first supervisor to establish such expectations in an April 2019 supervisory statement.[18] The statement encourages firms to address the financial risks from climate change through their existing risk management frameworks, in line with their board-approved risk appetite. In subsequent letters to its supervised institutions, the PRA further clarified that it expected institutions to have fully embedded their approaches to managing climate-related risk by the end of 2021 and provided a summary of the climate-related risk management capabilities the PRA would expect institutions to demonstrate.[19]

Similarly, other foreign supervisors have published climate risk management expectations. For example, the ECB issued a guide on climate-related and environmental risks in November 2020 that stated that institutions should understand the effect of climate-related and environmental risks on the business environment in which they operate to be able to make informed strategic and business decisions.[20] The Financial Services Agency of Japan issued guidance in July 2022 with the intent to initiate a dialog with institutions about climate-related financial risk management.[21]

These foreign supervisory expectations are similar to the Board's draft climate risk management principles in that they encourage institutions to manage the potential risks from climate change through existing risk management frameworks. A key difference, however, is that unlike the Board's draft principles, foreign supervisory expectations are not directed exclusively to large institutions. For example, the PRA's 2019 supervisory statement notes that the expectations are not limited to institutions of a certain size but expect a firm's response to the financial risks from climate change to be proportionate to the nature, scale, and complexity of its business.

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[17] The comment period for the Board's draft principles closed on February 6, 2023.

[18] Bank of England, Prudential Regulatory Authority, *Enhancing Banks' and Insurers' Approaches to Managing the Financial Risks From Climate Change*, Supervisory Statement SS3/19, April 2019.

[19] Bank of England, Prudential Regulatory Authority, "Dear CEO Letter: Managing Climate-Related Financial Risk—Thematic Feedback From the PRA's Review of Firms' SS3/19 Plans and Clarifications of Expectations," July 2020; and Bank of England, Prudential Regulatory Authority, "Dear CEO Letter: Thematic Feedback on the PRA's Supervision of Climate-Related Financial Risk and the Bank of England's Climate Biennial Exploratory Scenario Exercise," October 2022.

[20] European Central Bank, *Guide on Climate-Related and Environmental Risks: Supervisory Expectations Relating to Risk Management and Disclosure*, November 2020.

[21] Japan's Financial Services Agency, *Supervisory Guidance on Climate-Related Risk Management and Client Engagement*, July 2022.

Some central banks and supervisors have reviewed their supervised institutions' progress in meeting the expectations for managing climate risk and are considering actions to ensure compliance with the expectations. In October 2022, the Bank of England provided public feedback in a letter to its supervised institutions.[22] Additionally, the ECB conducted a review of institutions' climate and environmental risk management practices to foster alignment with its supervisory expectations. A presentation on the results of the ECB's review stated that for a small number of banks, the 2022 supervisory exercises on climate and environmental risks affected their supervisory review and evaluation process scores and that these, in turn, affect the banks' capital requirements.[23] The Bank of England has also indicated that climate risk management practices could be considered in capital requirements.[24]

[22] Bank of England, Prudential Regulatory Authority, "Dear CEO Letter: Thematic Feedback on the PRA's Supervision of Climate-Related Financial Risk and the Bank of England's Climate Biennial Exploratory Scenario Exercise," October 2022.

[23] The ECB conducts the supervisory evaluation and review process annually and scores institutions on four components: business model, internal governance, risks to capital, and risks to liquidity.

[24] *Capital requirements* are standardized regulations that determine how much capital institutions must hold based on types of asset holdings and risks.

The Board Initiated a Pilot Climate Scenario Analysis Exercise Similar to Exercises Developed by Its Foreign Counterparts

Globally, supervisors are using climate scenario analysis to assess financial institutions' resilience under various hypothetical scenarios with stressors from physical or transition climate risks. The Board initiated a pilot climate scenario analysis exercise in 2023 and will be the first U.S. financial regulator to conduct such an exercise. Over the last few years, multiple foreign financial institution supervisors have completed pilot climate scenario analysis or climate-related stress test exercises to better understand the climate-related risks to financial institutions. While these exercises differed in scope, their results all cited the lack of reliable, consistent, and comparable climate data as a limitation and concluded that institutions need to do additional work to understand and manage climate-related risks.

Climate Scenario Analysis

Climate scenario analysis is an emerging tool for understanding climate-related financial risk. The Basel Committee on Banking Supervision's (BCBS) *Principles for Effective Management and Supervision of Climate-Related Financial Risks* encourages financial institution supervisors to consider using climate scenario analysis or climate-related stress testing to evaluate a firm's financial position under severe but plausible scenarios.[25] Climate scenario analysis may be conducted *top down*, with the supervisor performing the assessment of the effect of climate-related financial risk on institutions' portfolios; *bottom up*, with the supervisor providing the scenarios and asking the institutions to conduct the analysis; or through a hybrid of the two methods.

The Board's pilot climate scenario analysis exercise is distinct from its bank stress tests. The Board's stress tests assess whether institutions have sufficient capital to continue lending during a severe economic event. The Board's climate scenario analysis exercise, on the other hand, explores climate-related financial risks. Other central banks use the terms *climate scenario analysis* or *climate-related stress tests* to describe similar exercises. Some financial institutions are also using climate scenario analysis to understand their risks.

[25] The BCBS is an international organization comprising central banks and authorities with formal responsibility for banking supervision. Its mandate is to strengthen the regulation, supervision, and practices of banks worldwide with the purpose of enhancing financial stability. The BCBS does not have formal supranational authority, and its standards do not have legal force. Rather, the national supervisors may incorporate these standards into their regulations. As part of its work, the BCBS exchanges information with banking supervisory authorities and central banks on developments in the banking sector and financial markets to help identify current or emerging risks for the global financial system. System staff helped to draft the Basel committee principles.

The Board's Pilot Climate Scenario Analysis Exercise

In September 2022, the Board announced that six of the nation's largest banks will participate in a pilot climate scenario analysis exercise designed to enhance the ability of supervisors and firms to measure and manage climate-related financial risks. The purpose of the scenario analysis is to assess the potential effect of climate change on individual bank performance over a range of plausible scenarios and relevant time horizons to support the Board's safety and soundness objectives, promote resilience to climate-related risks, and identify areas of elevated risks and concentrated exposures.

- In January 2023, the Board published details on how its pilot climate scenario analysis exercise will be conducted and information on risk management practices that will be gathered over the course of the exercise. The Board provided climate scenarios that explore physical and transition risks. The exercise is expected to conclude by the end of the year.
- Over the course of the pilot, participating institutions will analyze the effect of the scenarios on specific portfolios and business strategies.
- The Board will then review the institutions' analyses and engage with those institutions to build capacity to manage climate-related financial risks.

The Board anticipates publishing insights from the pilot at an aggregate level, reflecting lessons learned about climate risk management practices and how insights from the scenario analysis will help identify potential risks and promote effective risk management practices. The Board intends for this work to be an exploratory learning exercise that will not result in any capital or supervisory implications for the institutions.

Foreign Central Banks' and Supervisors' Pilot Climate Scenario Analysis and Stress Test Exercises

Some foreign central banks and supervisors have completed pilot climate scenario analysis or climate-related stress test exercises and have published high-level results.[26] These exercises were described as pilot or exploratory exercises that did not have capital implications for the institutions. The exercises ranged in scope and included as few as 3 banks to as many as 41 banks. Because of the differences in supervisory authority, some supervisors included insurance companies in their exercises as well.

The objectives of the exercises were similar. Consistent with the Board's intended approach, the foreign supervisors sought to understand the climate-related risks to financial institutions. In the published high-level results from its scenario analysis exercise, the Banque de France encouraged other supervisors to launch their own exercises to contribute to the development of a common knowledge base of climate risk assessment.

[26] The OIG team reviewed scenario analysis or stress test results from the Banque de France and the Prudential Supervision and Regulation Authority in France; the Bank of Canada and the Office of Superintendent of Financial Institutions in Canada; the Bank of England; the ECB; and the Bank of Japan and the Financial Services Agency of Japan.

Most financial institution supervisors conducted bottom-up scenario analysis and stress test exercises; that is, the supervisors provided the climate scenarios for the institutions to complete with their own information and models.[27] The Board is also planning this type of exercise. Common themes from the results included the supervisors noting that the institutions' assumptions and approaches to completing the exercises varied. Most of the results concluded that supervised financial institutions are starting to make progress on addressing climate-related risks but that they have more work to do to improve their climate risk management capabilities. All the results cited data availability as a limitation for the exercises. For example, the Bank of England noted in *The Results of the 2021 Climate Biennial Exploratory Scenario* that the inability to capture appropriate and robust data in certain areas is a common limitation.

Some of the results included lessons learned for the financial institution supervisors conducting the exercises that could benefit the Board. For example, the Bank of Canada noted that the institutions participating in its scenario exercise needed more time and resources than expected to assess transition risks. Additionally, the Bank of England suggested that supervisors allow participating institutions to exercise flexibility in their approaches to modeling and ask participating institutions to work directly with their customers, for example, the corporations that they lend to, on climate risk analysis to identify data and modeling gaps.

SCC staff have discussed climate risk scenario analysis or climate-related stress test approaches and outcomes with their counterparts in other central banks and agencies. Board staff members said that the Board has learned from the experiences of these other supervisors.

[27] The Bank of Canada and the Office of Superintendent of Financial Institutions conducted a hybrid scenario analysis exercise. Their institutions were provided scenarios to analyze and the Office of Superintendent of Financial Institutions conducted a top-down overview analysis.

The Board's Approach to Climate Risk Supervision Focuses on the Largest Institutions, Which Differs From the Approach of Some Foreign and U.S. Supervisors

The Board seeks to tailor its supervision activities to reflect differences in the size, complexity, and risk of supervised financial institutions. Although the Board's supervisory focus for climate risks is ensuring that the largest banks are appropriately identifying, measuring, monitoring, and managing climate-related risks, smaller institutions may also experience climate-related financial risks. Other central banks and supervisors have taken steps to assist smaller institutions in identifying and managing their climate-related financial risks.

The Board's Focus on the Largest Institutions

The Board is developing and implementing an approach to climate risk supervision that focuses on the largest institutions. Specifically, the Board's pilot climate scenario analysis exercise includes six of the nation's largest banks. The Board is not currently engaging with regional banking organizations (RBOs) or community banking organizations (CBOs) on climate-related financial risk.[28] In addition, the guidance that the Board is developing with the OCC and the FDIC is directed to the largest institutions—those with over $100 billion in consolidated assets.[29] According to a Board official, these large institutions have the resources to conduct sophisticated analysis. The largest banks have identified climate change as a potential risk, and over the last few years, some have initiated steps to measure and monitor the risk by conducting scenario analysis.

The largest institutions may be more resilient to climate-related extreme events because they have more diversified business models and more sophisticated risk management practices. In contrast, RBOs and CBOs are more vulnerable to regionally concentrated physical risk, including sudden extreme weather-related events. Smaller institutions also may experience greater risk because of their limited geographic footprint or more concentrated lending. A Board official stated that because smaller institutions pose less risk to the nation's financial system, it is appropriate for the Board to be risk focused and prioritize addressing climate risk at the largest institutions. The Board supervises 3,544 CBOs and 99 RBOs with

[28] The Board defines CBOs as institutions with less than $10 billion in total assets and RBOs as institutions with total assets between $10 billion and $100 billion.

[29] Both the OCC's and the FDIC's proposals focus on large banks with over $100 billion in assets. In December 2022, the Board requested public comments on draft principles for climate-related financial risk management for institutions with over $100 billion in assets. The Board will consider the public comments before finalizing any guidance.

approximately $5 trillion in assets collectively; however, the largest financial institutions and foreign banking organizations supervised by the Board have approximately $25 trillion in assets collectively.[30]

The Board's existing guidance on risk management and operational resiliency could be used to address the climate-related financial risks smaller institutions face. Board interviewees stated that although RBOs and CBOs may have more concentrated risk exposures because of their limited geographic footprints, they are accustomed to managing physical risks. For example, an interviewee said that a community bank from a coastal state would manage risks from hurricanes on a regular basis.

Foreign Central Banks' and Supervisors' Broader Approach

Other central banks and financial institution supervisors have not limited their approaches to climate risk supervision to the largest institutions. As one foreign official stated, the risk from climate change to an institution is not necessarily commensurate with the institution's size. Other financial institution supervisors have published climate risk management expectations for institutions of all sizes, including smaller institutions.

An official from a domestic state financial regulatory agency noted the importance of supervisors educating smaller institutions on climate risks because those institutions may be less aware of the risks and have fewer resources to dedicate to the effort. We learned that other supervisors are also planning to take measures to educate smaller institutions on climate risks, such as by

- developing a beta version of an online climate scenario analysis tool to support institutions in assessing their climate-related risks and opportunities, particularly for small institutions that lack the resources but need to focus on climate change in the short term
- establishing a dialog with small and regional financial institutions to help those institutions address climate change
- developing a white paper targeted to smaller institutions to provide practical guidance on managing climate-related financial risk

[30] Board of Governors of the Federal Reserve System, *Supervision and Regulation Report*, November 2022.

Climate Risk Uncertainty and Data Availability Pose Challenges for Supervisors and Supervised Institutions

Uncertainty about the effects of climate change and the unavailability of quality climate-related data pose challenges for financial institutions and their supervisors as they attempt to understand and manage climate-related financial risks. The Board and other U.S. and foreign supervisors are taking steps to address these challenges.

Climate Risk Uncertainty

The uncertainty of the timing and magnitude of the effects from climate change poses challenges for both supervisors and supervised institutions. Predicting the timing and effect of physical risks, such as wildfires, hurricanes, and floods, is inherently complex. The severe effects of climate change may not be felt in the near term—such effects may not be apparent for a decade or more. In addition to the uncertainty about physical climate risks, transition risks are also uncertain. Transition risks, such as future public policy developments, technological changes, and shifts in consumer behavior and preferences in response to climate change, are unknown. Such uncertainty results in physical and transition risks that are more challenging to model.

Generally, supervisors and institutions rely on historical data to understand present-day risks. However, significant future climate events may be quite different from prior events, making historical records less useful to supervisors and financial institutions as they develop detailed climate risk assessments. For example, the historical record becomes less useful for predicting the effect of significant climate events if several 100-year floods were to occur in quick succession.

Climate-Related Data Availability

The lack of available quality data about climate risks is a critical constraint for supervisors and financial institutions. Climate risk analysis requires reliable, consistent, and comparable data and projections for climate risks, exposure, sensitivity, vulnerability, adaptation, and resilience.[31] In addition, accurate climate risk assessments require granular data, as the occurrence of physical risk events varies widely across geographical regions, industries, and underlying assets.

Multiple Board and Reserve Bank officials noted challenges associated with data availability as the System develops an approach to climate risk supervision. An official explained that typically, supervisors and institutions have quality data and observations on which to base their risk management programs and

[31] U.S. Commodity Futures Trading Commission, *Managing Climate Risk in the U.S. Financial System*, Report of the Climate-Related Market Risk Subcommittee, Market Risk Advisory Committee of the U.S. Commodity Futures Trading Commission, 2020, p. 9.

strategies, but for modeling climate risks, obtaining quality data and applying those data to risk management and governance is difficult.

Board Actions to Address Climate Data Concerns

The SCC conducted outreach and collaborated with other System groups to obtain and analyze climate data. In addition to those efforts, the Board has taken the following actions to address data challenges:

- **Climate Data Hub.** The Board's Office of the Chief Data Officer developed the data hub to help address the data challenges and to support the System's engagement on climate change issues. The data hub provides access to a wide variety of data to support policymakers' understanding of the microprudential and macroprudential risks associated with climate change, as well as the effects of climate developments.
- **Climate Data Committee.** The Climate Data Committee was established to oversee, coordinate, and prioritize data acquisitions and to support the development of tools needed to facilitate work related to climate change.
- **FSOC Office of Financial Research's Climate Data and Analytics Hub.** Board staff are working on the FSOC Office of Financial Research's efforts to develop its own Climate Data and Analytics Hub for FSOC members to share climate data.[32] Board interviewees said the FSOC Climate Data and Analytics Hub is an important tool for making climate data accessible to all FSOC agencies. An interviewee from another FSOC member agency also stated that they view the Climate Data and Analytics Hub as a positive development and emphasized the importance of coordination to ensure that member agencies have access to climate data.

Foreign Central Banks' and Supervisors' Views on Uncertainty and Data Availability

Interviewees from other financial supervisory agencies and central banks also cited uncertainty about the time horizons for and magnitude of climate change and the lack of quality data as challenges for supervisors and institutions. The Bank of England's *Results of the 2021 Climate Biennial Exploratory Scenario* notes that "one recurrent theme across [scenario analysis] participants' submissions was a lack of data on many key factors that participants need to understand to manage climate risks."[33] Similarly, the ECB's *2022 Climate Risk Stress Test* notes, "Climate-related data availability is a challenging factor for many institutions, and it reportedly represents the key driver for the lack of a climate risk stress-testing framework."[34] Additionally, representatives of foreign financial supervisors noted large data gaps in their institutions' scenario responses and large variances in their institutions' estimates and assumptions, which reduced the comparability of results across institutions.

Foreign supervisors have taken steps to address the challenges associated with climate risk uncertainty and data availability. For example, the Climate Financial Risk Forum, an industry forum convened by the

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[32] Financial Stability Oversight Council, *Report on Climate Related Financial Risk*, October 2021, p. 39.

[33] Bank of England, *Results of the 2021 Climate Biennial Exploratory Scenario*, May 24, 2022, p. 6.

[34] European Central Bank, Banking Supervision, *2022 Climate Risk Stress Test*, July 2022, p. 21.

Bank of England's PRA and the Financial Conduct Authority, published a guide containing key insights on climate risk data and metrics.[35] The ECB's 2022 Climate Agenda describes improving the availability and quality of climate data to better identify and manage climate-related risks and opportunities as a key strategic objective.[36] The ECB encouraged institutions to develop their data governance frameworks and more actively collect granular data to assess the full magnitude of their risks.[37]

Other Efforts to Enhance Climate Risk Data Availability

As described above, the Board has started to take steps to address climate data availability challenges independently and in collaboration with other agencies. Additionally, these challenges may abate over time as additional and more-reliable information about climate change becomes available through scientific research. For example, the National Oceanic and Atmospheric Administration noted in its 2022 *Global and Regional Sea Level Rise Scenarios for the United States* that the current evidence provides greater confidence in a narrower range of projected sea level rise globally, nationally, and regionally for 2050 than it previously reported in 2017.[38]

Comparable climate-related financial risk data for institutions will also become more available as institutions are required to provide that information through financial statement disclosures. In March 2022, the U.S. Securities and Exchange Commission proposed a rule that would require public companies to disclose climate-related information in their financial reports.[39] When finalized, the rule is intended to provide more consistent, comparable information about the effects of climate risks.[40]

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[35] Bank of England, Climate Financial Risk Forum, web page, retrieved November 4, 2022.

[36] European Central Bank, "ECB Climate Agenda 2022," press release, July 4, 2022.

[37] European Central Bank, *Walking the Talk: Banks Gearing Up to Manage Risks From Climate Change and Environmental Degradation—Results of the 2022 Thematic Review on Climate-Related and Environmental Risks*, November 2022, p. 3.

[38] National Oceanic and Atmospheric Administration, *Global and Regional Sea Level Rise Scenarios for the United States*, February 2022, p. 14.

[39] U.S. Securities and Exchange Commission, "SEC Proposes Rules to Enhance and Standardize Climate-Related Disclosures for Investors," press release, March 21, 2022.

[40] U.S. Securities and Exchange Commission, "Proposed Rule: The Enhancement and Standardization of Climate-Related Disclosures for Investors," 87 Fed. Reg. 21,334, 21,340 (April 11, 2022).

Conclusion

The Board views as part of its responsibilities ensuring that supervised institutions operate in a safe and sound manner and can manage all types of risks including those risks related to climate change.[41] The Board's existing guidance addresses risk management at financial institutions, and Board officials have expressed a range of views on the need to issue additional guidance to specifically address climate risks. The Board requested public comments on draft principle-based guidance for climate risk and initiated an exploratory scenario analysis exercise at six large institutions. The Board's draft guidance and exploratory scenario analysis exercise are comparable to those of other central banks in the areas where their mandates overlap.

The Board is in an early stage of its supervisory work on this topic and is seeking to better understand the risks. Board staff and officials conducted a deliberative process to consider the significant number of comments received on the draft principle-based guidance. Additionally, the Board plans to learn more about the implications of climate risks to financial institutions and their risk management practices to address those risks through the exploratory scenario analysis exercise. The Board intends to consider the results of these steps as it implements a supervisory approach for climate risks at financial institutions.

[41] Board of Governors of the Federal Reserve System, *Supervision and Regulation Report*, November 2020.

Abbreviations

BCBS	Basel Committee on Banking Supervision
CBO	community banking organization
ECB	European Central Bank
FDIC	Federal Deposit Insurance Corporation
FSOC	Financial Stability Oversight Council
OCC	Office of the Comptroller of the Currency
PRA	Prudential Regulation Authority
RBO	regional banking organization
SCC	Supervision Climate Committee

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